REMARKS/ARGUMENTS

The preceding amendments and following remarks are submitted in response to the non-final Office Action mailed November 29, 2005, setting a three month shortened statutory response ending February 28, 2006. With this Amendment, claims 34-35 have been added. Claims 1-18 and 34-35 remain pending in this application. Reconsideration, examination and allowance of all pending claims are respectfully requested.

35 U.S.C. § 103 Rejections

On page 2 of the Office Action, the Examiner rejected claims 1-2, 6, and 18 under 35 U.S.C. § 103(a) as being unpatentable over *Fuller et al.* (Ink-Jet Printed Nanoparticle Microelectromechanical Systems) in view of *Nakamura et al.* (U.S. Patent No. 6,371,61). The Examiner states that *Fuller et al.* disclose inkjet printing first and second conductive layers and inkjet printing a conductive layer above a sacrificial layer to form a flexible actuator. The Examiner acknowledges that that *Fuller et al.* reference does not disclose inkjet printing of the first sacrificial layer, but states that *Nakamura et al.* disclose the use of inkjet printing polymethylmethacrylate (PMMA). According to the Examiner, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teachings of *Fuller et al.* and *Nakamura et al.*, stating that inkjet printing would be a much faster and precise way to deposit the sacrificial layer.

Applicants respectfully assert that the *Fuller et al.* and *Nakamura et al.* references cited by the Examiner do not disclose or suggest the methods recited in claims 1-2, 6, and 18. The *Fuller et al.* article appears to describe a process of inkjet printing layers of metallic material

onto a glass substrate in order to build 3-D structures. On pages 58-59 of the article under Section D ("Heatuators"), *Fuller et al.* describe the process of forming a cantilevered structure by applying a liquid solution of PMMA onto a glass slide with a pipette, spreading the PMMA over a portion of the substrate using a draw-down bar, inkjet printing a metallic layer over the PMMA layer, and then dissolving the PMMA using a sonification process. As can be seen in Figure 8(c), the PMMA layer is formed directly over the glass substrate and not the inkjet printed metal layer (shown in bold). In a subsequent step depicted in Figure 8(d), the removal of the PMMA from underneath a portion of the inkjet printed metal layer produces an opening above the substrate, releasing the cantilever structure above the substrate.

The *Nakamura et al.* reference, in turn, appears to disclose an inkjet printing method for applying ink dyes onto cloth. During the application process, a synthetic resin such as PMMA is applied to the cloth, which during a later wet-heat treatment step, causes the synthetic resin to form a film. In use, the application of the resin to the cloth acts to cover the individual surfaces of the cloth fibers, allowing the cloth to be used outdoors without being subjected to wind pressures. *See* col. 4, lines 24-33.

Applicants respectfully submit that neither *Fuller et al.* nor *Nakamura et al.* disclose or suggest all of the elements of claims 1-2, 6, and 18. Claim 1 recites in full:

> 1. (Original) A method of forming a structure, comprising the steps of:
> ink-jet printing a first layer;
> ink-jet printing a first sacrificial layer above at least part of the first layer;
> ink-jet printing a second layer above at least part of the first sacrificial layer; and
> removing the first sacrificial layer to create at least one first open space within the structure.

Thus, as can be seen above, independent claim 1 recites, among other novel elements, the step of ink-jet printing a first sacrificial layer above at least part of an ink-jet printed first layer.

In contrast to the method recited in claim 1, the layer of PMMA shown and described in *Fuller et al.* is not located above a first ink-jet printed layer. In *Fuller et al.*, the sacrificial layer of PMMA appears to be formed directly over the glass substrate by applying the PMMA to the substrate via a pipette, and then subsequently spreading the PMMA over a portion of the substrate using a draw-down bar. As can be clearly seen in Figure 8(c), the sacrificial layer of PMMA is not located above the first ink-jet printed layer, but is instead located underneath a portion of the ink-jet printed layer. Furthermore, the sacrificial layer of PMMA is not ink-jet printed, as recited in claim 1.

The *Nakamura et al.* reference similarly fails to disclose or suggest ink-jet printing a sacrificial layer above at least part of a first ink-jet printed layer. In *Nakamura et al.*, the synthetic resin appears to be applied directly to the substrate (*i.e.* cloth) to be ink-jet printed such that the resin is located underneath the resin, not above as recited in claim 1. Accordingly, since the *Fuller et al.* and *Nakamura et al.* references fail to disclose each and every element, Applicants respectfully assert that claim 1 is patentable overt the cited prior art. Moreover, dependent claims 2, 6, and 18 are also believed to be patentable for at least the reasons provided above, and since they contain other features not disclosed or suggested by the cited prior art.

In addition, Applicants respectfully submit that there is no motivation or suggestion to combine the teachings of *Fuller et al.* with that in *Nakamura et al.* to arrive at the methods of claims 1-2, 6, and 18. The *Nakamura et al.* reference is directed to the ink-jet printing of dyes

onto cloth using synthetic resins such as PMMA to cover the individual surfaces of the fibers. Although *Nakamura et al.* does disclose that the resin can be applied by ink-jet printing, nothing in that reference suggests using ink-jet printing to form a sacrificial layer above another ink-jet printed layer, which is then later removed to create at least one first open space within the structure. Instead, *Nakamura et al.* states that such resin layer is used in covering the individual surfaces of the cloth, which is an entirely different purpose from the sacrificial layer recited in claim 1 and described in the present Application. As such, Applicants respectfully submit that there is no motivation or suggestion to combine the references in arriving at the methods of claims 1-2, 6, and 18.

With this Amendment, Applicants have added newly presented claims 34 and 35, which Applicants submit are patentable over the cited prior art. Newly presented claim 34 recites, among other elements, the step of forming a first sacrificial layer above at least part of a first flexible layer. Newly presented claim 35, in turn, recites the steps of ink-jet printing a first electrode layer, ink-jet printing a first dielectric layer, and ink-jet printing a first sacrificial layer above at least part of the first dielectric layer, which are not disclosed or suggested by the cited prior art references.

Allowable Subject Matter

On page 3 of the Office Action, the Examiner objected to claims 3-5 and 7-17 as being dependent upon a rejected base claim, but states that such claims would otherwise be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As discussed previously, independent claim 1 of the present invention recites elements not disclosed or suggest by the *Fuller et al.* and *Nakamura et al.* references. Accordingly, Applicants respectfully assert that claims 1-18 are in condition for allowance.

On page 3 of the Office Action, the Examiner further states that claims 3-5 and 7-17 would be allowable "if rewritten to overcome the rejection(s) under 35 U.S.C. § 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claim."

Applicants counsel has carefully reviewed the Office Action, but was unable to find the § 112, ¶ 2 rejections mentioned by the Examiner. A review of the Office Action Summary sheet accompanying the Office Action indicates that claims 3-5 and 7-17 are not rejected, but are instead objected to. As such, Applicants consider the Examiner's statements regarding the rejection of claims 3-5 and 7-17 under 35 U.S.C. § 112, second paragraph, to be in error.

Reexamination and reconsideration are respectfully requested. It is respectfully submitted that the claims are now in condition for allowance, and issuance of a Notice of Allowance in due course is requested. If a telephone conference might be of assistance, please contact the undersigned attorney at (612) 359-9348.

Respectfully submitted,

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